

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 845 747 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.06.1998 Bulletin 1998/23

(51) Int. Cl.⁶: G06F 17/60

(21) Application number: 97120131.4

(22) Date of filing: 17.11.1997

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE
Designated Extension States:
AL LT LV MK RO SI

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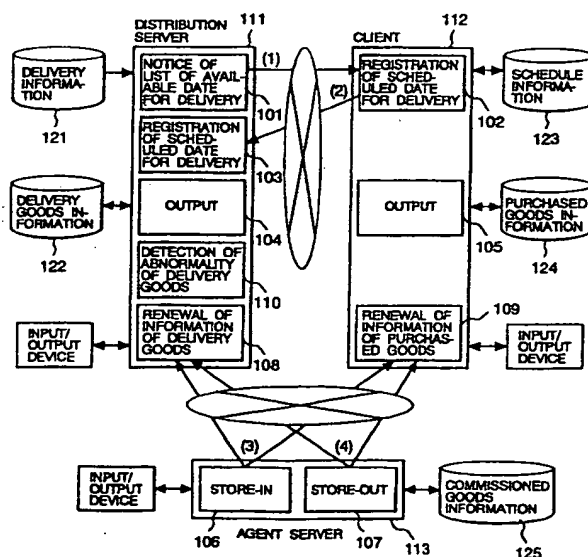
(30) Priority: 28.11.1996 JP 317438/96

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(54) A delivery managing system

(57) A system for managing the delivery of goods from a distribution centre through an agent to a receiver comprises a client for providing at least a schedule information of the receiver; a distribution server for providing at least a delivery schedule information and for managing the delivery of the goods; an agent server for managing the commission on the goods by the agent; a data transmission network interconnecting said client, said agent server and said distribution server; means for determining the date and time for delivery of the goods, or for deciding the agent to be used, between said client and said distribution server; and means for noticing of store-in and/or store-out of the goods into and/or from the agent to at least one of said distribution server and said client.

FIG. 1



Description

BACKGROUND OF THE INVENTION:

FIELD OF THE INVENTION

The present invention relates to a system for supporting delivery of purchased goods or commodities from a distribution center to a purchaser when she/he bought it through such as an on-line shopping service and/or a mail order system.

DESCRIPTION OF PRIOR ART

With widely spreading of an on-line shopping service through such an Internet and so on, demand for delivery services is expected to increase more than ever before. On the other hand, because of increase in average age of marriage, as well as in the number of families whose both parents go out for jobs, such possibility has been increased that the purchaser is absent from home when the delivery service visits at her/his house. And, it causes a problem that the distributor must deliver it again, thereby increasing the cost of delivery service. Also, it causes another problem for the purchaser that she/he cannot easily or quickly receive the commodities or goods that she/he bought. Therefore, for both the distributor and the purchasers, it is very important object to realize and to establish a smooth delivery system of the purchased commodities or goods, at the present as well as in the future.

For dissolving such problems, there was already known a technology with which the delivery of the commodities or goods can be done even in an instance of absence of family members at home. For example, in accordance with a conventional technology, a delivery box is provided for each family at the entrance of the house thereof, and only the distributor is informed of an identification number or code of the delivery box thereby prohibiting or protecting the box from being opened by the persons other than the distributor so as to maintain the security thereof (Japanese Patent Laying-Open No. Hei 02-1051572). Or, there was also known a technique in which, in a common place of a condominium is provided a delivery locker for common use, in which a plurality boxes are provided, thereby enabling the delivery of commodities or goods to be delivered for each room of the condominium (Japanese Patent Laying-Open No. Hei 06-270992). However, hereinafter, a block for storing or receiving a single commodities or goods therein is called "a box", and a structure having one or more of such boxes is called "a delivery locker" as a whole.

As an another means for dissolving the problem mentioned above, there was also known a method, in which the distributor automatically registers data about date and time when the resident of address to be delivered wishes to receive the goods into a data base thereof through push buttons when receiving an infor-

mation through a telephone from the resident on the desired date and time for delivery service. And, using this data, the chance of delivering to the residence in absence can be reduced (Japanese Patent Laying-Open No. Hei 05-165847). In accordance with this method, it is further described that the tendency of the resident(s) to stay at home on day and time can be detected by storing the data about date and time when the resident(s) of that address wishes to receive, therefore, even if there is no information from the receiver or addressee in a certain case of delivery of the goods, the chances of delivering at the residence in absence can be reduced by using that tendency.

SUMMARY OF THE INVENTION

As is apparent from the above, it is possible to achieve home deliver service of commodities or goods even in absence of the purchaser by using the delivery box of the conventional technology. However, it is still difficult to provide such the delivery box in front of every house and such the common delivery locker in the common place for every condominium, from a view point of spaces.

Further, if being provided such the common delivery locker in the common place of the condominium, there is still a problem in the conventional technology mentioned above, i.e., of forgetting to receive the delivered commodities. For the distributor side, since it is impossible to check whether the delivered commodities which is received in the delivery box is taken out therefrom or not, it is also impossible to make a confirmation of receipt by the resident of the addressee. In other words, it is still impossible to follow up the receipt by the resident of the address of the delivery goods.

Further, in the method for reducing the chance of delivery to the absent residence by using the information of desired date and time for the delivery service in accordance with the conventional art, it is necessary for the resident of the address to know that there is commodities or goods to be delivered to her/him. For this reason, the distributor must previously notices the resident of the address that there is the comedies or goods to be delivered to her/him, by using such as a telephone call or a card for absentee. This also comes to be a considerable burden for the distributor. Further, the tendency detected from the stored data of the desired date and time for delivery can only indicate that the resident stays at home accidentally on a certain date and time of a day of a week, only up to that time. Therefore, even in the case that it is delivered on the detected date and time of high possibility for the resident to stay at home, the possibility of absence is still high, and there is still remained a lot of possibility that the purchased commodities could be delivered earlier than that detected date and time.

Thereby, an object of the present invention is, for dissolving the problems in the prior art mentioned

above, to provide a smooth delivery system from the distributor to the purchaser of the commodities or goods which is purchased through the on-line shopping service and so on.

For accomplishing the object mentioned above, in accordance with the present invention, there is provided means for determining scheduled date and time for delivery of the purchased commodities or goods, from a schedule information of a delivery information of each area of the distributor and a schedule information of the purchaser.

Further, there is provided means for determining that the delivery of the commodities or goods is to be conducted through an agent, on a basis of an information of a standard for using an agency, in relation with the commodities or goods to be delivered.

Further, in case that the commodities or goods is decided to be delivered from the distributor to the purchaser through an agency, there is provided means for detecting the commodities or goods that has been kept in the agent in long time.

Brief Description of the Drawings:

Fig. 1 shows a functional construction diagram of a delivery managing system in accordance with a first embodiment of the present invention;

Fig. 2 shows a hardware construction of each server of the above delivery managing system;

Fig. 3 shows an example of a delivery information used in the above delivery managing system;

Fig. 4 shows an example of a delivery goods information used in the above delivery managing system;

Fig. 5 shows a detailed processing flow of a step of noticing of a list of available date for delivery in the above delivery managing system;

Fig. 6 shows an example of a schedule information used in the above delivery managing system;

Fig. 7 shows an example of a purchased goods information used in the above delivery managing system;

Fig. 8 shows a detailed processing flow of a step of registering a scheduled date for delivery in the above delivery managing system;

Fig. 9 shows an example of a commissioned goods information used in the above delivery managing system;

Fig. 10 shows a detailed processing flow of a step of a store-in of an agent server in the above delivery managing system;

Fig. 11 shows detailed processing flow of a step of a store-out of the agent server in the above delivery managing system;

Fig. 12 shows a functional construction diagram of a delivery managing system in accordance with a second embodiment of the present invention;

Fig. 13 shows a hardware construction of an agent

server of the delivery managing system shown in Fig. 12;

Fig. 14 shows an example of the delivery goods information used in the second embodiment mentioned above;

Fig. 15 shows an example of a locker information used in the second embodiment mentioned above;

Fig. 16 shows a detailed processing flow of a step the store-in of the agent server;

Fig. 17 shows an example of an information list of distributors in the delivery managing system of the second embodiment;

Fig. 18 shows a detailed processing flow of a step of the store-out of the agent server of the delivery managing system of the second embodiment; and

Fig. 19 shows a functional construction diagram of a delivery managing system in accordance with a third embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS:

Hereinafter, embodiments according to the present invention will be fully explained by referring to the attached drawings.

Fig. 1 shows a functional construction diagram of a first embodiment of the present invention. In the present embodiment, there are provided a client and two (2) kinds of servers, including a distribution server and an agent server, and the client and the each server of those two servers is connected with an information transmission network, such as a telephone cable. However, those two (2) kinds of servers are respectively located in a plurality number thereof. In Fig. 1, a reference numeral 111 indicates an assembly of functions on the distribution server, 112 an assembly of functions on the client, and 113 an assembly of functions on the agent server. Reference numerals (1) through (4) attached to arrows in Fig. 1 indicate rough sequential order of procedures. In the embodiment of the present invention, the delivery of commodities or goods from a distributor to a receiver or an addressee is carried out after establishing a contract between the seller and the purchaser, in case of an on-line shopping. However, taking a case of gifts into consideration, the receiver or addressee who is primarily to be a client is not necessarily to be the purchaser.

The commodities or goods on which the contract was made, in the embodiment, is called by three kinds of names, for example, "a delivery goods", "a commissioned goods", and "a purchased goods". This is because of differences from various view points, such as from a view point of the distributor, a view point of the agent, and a view point of the purchaser. However, when calling by names of "delivery goods information", "commissioned goods information" and "purchased goods information", they differs one another in the contents of the information to be used for management in

respective standing points, therefore they mean differently. Such a "Contract code", which is a basic information for the delivery goods information 122 and the purchased goods information 124, and a "name of goods" is an information which was produced when the contract was made, therefore they are treated as if they have been already existing in the present embodiment. However, if the purchaser differs from the receiver, there is no purchased goods information for the client as the receiver or addressee. In the delivery goods information 122, purchased goods information 124 and the commissioned goods information 125, the same "contract code" means that the same goods is treated. In the present embodiment, the "contract code" is expressed by four (4) digits of numeral number. However, in the sense of practical matter, since each "contract code" must be unique from a whole of the contracts, it may be in a form which includes a name of the seller and so on therein.

Fig. 2 shows a hardware construction of each server. As an input apparatus, there are included a bar-code reader, an IC-card reader and soon other than a keyboard and a mouse. As an output apparatus, there are included a bar-code writer, an IC-card writer and so on other than a display and a printer.

Hereinafter, detail of the first embodiment will be explained with Fig. 1.

A step 101 is a step for notifying the personal information server of a list of a schedule for delivery by using the delivery information 121 and delivery goods information 122.

An example of the delivery information 121 is shown in Fig. 3 and an example of the delivery goods information 122 in Fig. 4. In case that a column 411 of the delivery schedule is blanked, it means that there is not yet determined the delivery schedule and the agent. If it is filled with numerals, it means scheduled date and time, and if it is filled with letters, it means the agent to be used. In case that the column 412 of delivery condition is blanked, it means that the delivery goods is located in the distribution center. If it is filled with numerals, it means the date and time of completion of the delivery, and if it is filled with letters, it means that it is located in the agent. In a column 413 of delivery goods arrival date, there is contained a scheduled date of arrival to the distribution center which is transmitted through the communication network, or a date when the goods is actually carried into the distribution center. Compilation of the delivery information is necessary as a function on the distribution server. However, in the present embodiment, the delivery information is treated as if it has been already existing, therefore no explanation will be given on the compilation function of the delivery information. The "contract code", "delivery address", "delivery goods" and "electronic address for delivery" of the delivery goods information are information which were produced when the seller and the purchaser made the contract, and they are noticed or inputted from the seller.

The detailed flow of the step 101 will be shown in Fig. 5.

In a step 501, the delivery goods information is obtained, in which a column of scheduled date for delivery is blanked. For example, such a delivery goods information 401 as shown in Fig. 4 is obtained.

In a step 502, a list of the scheduled date and time for delivery to the delivery address is obtained from the delivery addresses of the delivery goods information obtained and the delivery information 121. For example, the delivery address of the delivery goods information 401 is "Utsukushigaoka" in Fig. 4, then the data 301 and 302 are obtained that indicate date and time of starting and completing of delivery service in the area "Utsukushigaoka" as shown in Fig. 3.

In a step 503, the scheduled delivery date and time obtained in the step 502 and the contract code of the delivery goods are noticed to the electronic address for the delivery in the delivery goods information 122. For example, in the case of the delivery goods corresponding to the information 401 in Fig. 4, the contract code "1001" and the date and time of starting/completing of delivery 301 and 302 in Fig. 3 are noticed to the electronic address "tsukuda@aaa.bbb". In case that the purchaser is different from the receiver, not only the information of the contract code but also an information about the delivery goods is transmitted thereto.

A step 102 is a step in which the schedule of date and time for delivery is determined from the list of the scheduled date and time for delivery which is received from the distribution server, the schedule information 123 and the purchased goods information 124, and the determined schedule of date and time for delivery is noticed to the distribution server functioning as a source of noticing thereof.

An example of the schedule information 123 and that of the purchased goods information 124 are shown in Figs. 6 and 7, respectively. A storage 703 in Fig. 7 indicates a place where the purchased goods is kept in it. In the present embodiment, the schedule information 123 is treated as if it has been already existing. Although the compiling function of the schedule information is necessary as a function on the client, it is out of the scope of the present invention. The "contract code" and the "purchased goods" of the purchased goods information are information which were produced when the seller and the purchaser made the contract, and "a standard for using an agency" and "an agent to be used" are the information which were set after the purchaser bought and made the contract.

The detailed flow of the step 102 mentioned above will be shown in Fig. 8.

A step 801 is a step of obtaining the earliest one of the scheduled date and time for delivery from a list of the scheduled date and time for delivery and the schedule information. For example, since delivery service with the starting/completing date and time for delivery 301 shown in Fig. 3 is impossible judging from the schedule

information 601 shown in Fig. 6, and since there is no schedule during the period of 302, then the latter, i.e., the date and time of 302 in Fig. 3 is determined to be the scheduled date and time for delivery (here, it is assumed that there is not yet existing the schedule information 602 in this time point). Actually, for determining as the scheduled time for delivery, it must be confirmed that the starting time of the scheduled delivery is later than the time of the completion time of the schedule just before as well as taking the time for moving into the consideration. Further, there is necessity of confirming the relationship to the schedule of just after it, in the same manner. If there is no schedule information, then it is treated as if there is not any schedule therein.

In a step 802, there is determined whether the goods should be delivered to the agent or to the delivery address. If the time interval between the day when it reaches at the distribution center and the available earliest scheduled date is greater than the days defined in the standard for using agency 701 shown in Fig. 7, it is decided to use the agent, and then a step 803 is executed. If it is not so, then a step 804 is executed. For example, in the case of the delivery goods information 401 shown in Fig. 4, since the standard for using an agency of the purchased goods information 705 of the contract code "1001" in Fig. 7 is "5 days", and since the interval between the date of arriving at distribution center 402 "960922(15)" and the earliest scheduled date for delivery "960925(15)" does not exceed that 5 days, it is decided to be delivered to the delivery address. In case that "no use" is described in the column of the standard for using agency 701 in Fig. 7, the number of the days of the standard is considered limitless. As other standards for using agency other than that, there are cases of "impossible to deliver until ○th month, Xth day", "impossible to deliver after Δ days have been passed from the date of purchasing contract", "absent when delivered once", and so on. Further, with the delivered goods on which the standard for using agency is not described, it can be considered that a default standard is used for it. With this, even when the purchaser of the goods is different from the receiver (a client), it is possible to use the agency.

In a step 803, the agent to be used is noticed to the distribution server as the source of the list of the scheduled date and time for delivery. For example, in case of the goods of the contract code "1001" in Fig. 7, "agent X" in the column 701 is noticed to the distribution server from the purchased goods information 705.

In an arbitrary agent, the commission is not necessarily available for all of goods. For example, it cannot deal with if the goods is larger than a certain size(s); or if there is no room for storing the goods to be commissioned. For that reason, a plurality of agents may be noticed to the distribution server.

In a step 804, as well as the earliest one of the scheduled date and time for delivery is noticed to the

distribution server as the noticing source of the list of the scheduled date and time for delivery, the scheduled date and time for delivery is registered into the schedule information 123 and the purchased goods information 124. For example, as an schedule information relating to the contract code "1001", "starting date and time: 960925(16), completing date and time: 960925(18), place: home, contents: receiving of delivery goods" (602 in Fig. 6) is registered into the schedule information 123, and "960925(16)" is registered into 704, as shown in Fig. 7.

In a step 805, the distribution server as the noticing source of the list of the scheduled date and time for delivery is registered into a storage 703 shown in Fig. 7 of the purchased goods information 124 as the storage at the present.

A step 103 shown in Fig. 1 is a step in which the scheduled date and time for delivery from the client, or the agent to be used is registered into the delivery goods information 122. For example, the scheduled date "960925(6)" 704 in Fig. 7, which is noticed in relation with the contract code "1001" is registered into a column 403 in Fig. 4. At this time, also an information of the delivery goods is noticed to the agent to be used, as the case may be. When receiving a response that the agent cannot deal with, then the notice is made to another agent. If all the agents is unavailable, it is noticed to the client. Further, if a plurality of agents were noticed, only the agent which is decided to be used is noticed to the client.

In case that the delivery of delivery goods is conducted by the agent, the delivery goods itself is transferred from the distribution center to the agent. In this time, an information relating to the delivery goods is inputted on a paper or into a IC-card as a conveyable memory medium which can be attached therewith, by using the input apparatus including the bar-code reader, the IC-card reader and so on. If the information of the delivery goods was already noticed to the agent server through the communication network, a confirmation of the purchased goods will be done by comparing the purchased goods information through the network and that inputted through the input apparatus.

In a step 104 in Fig. 1, the information of the delivery goods to be transferred to the agent is outputted as a line of letters or in a form of the bar-code on the paper, or outputted into the IC-card as the conveyable medium. The information to be outputted includes the electronic address of the distributor.

In the step 105 in Fig. 1, in order to receive the purchased goods which is completed to be delivered to the agent, the information of the purchased goods is also outputted as a line of letters or in a form of the bar-code on the paper, or outputted into the IC-card as the conveyable medium.

A step 106 in Fig. 1 is a step, in which the purchased goods information inputted from the input apparatus is registered into the agent information 125 shown

in Fig. 9, and a notice of store-in of the goods is given to the distributor server and the client relating to it. For inputting, the bar-code or the card which are produced in the step 104 can be used. In this time, the delivery of the goods from the distributor to the agent is done.

The detailed processing flow of the step 106 will be given with reference to Fig. 10.

In a step 1001 in Fig. 10, the information inputted from the input apparatus is registered into the commissioned goods information 125. For example, in case that the information inputted from the input apparatus is "contract code: 2529, purchased goods: book, electronic address of distributor: info@a-butu.co, electronic address of purchaser: tsukuda@aaa.bbb" as shown in Fig. 9, the day when those information are inputted is treated as the day of store-in so as to set the commissioned goods information 901.

In a step 1002, the store-in of the delivery goods into the agent is noticed to the distribution server. For example, in the case of the commissioned goods information 901 shown in Fig. 9, the identification number "2529" and a flag of the store-in are noticed to the address "info@a-butu.co" of the distributor.

In a step 1003, the fact that the delivery goods is stored-in to the agent is noticed to the client, in the same manner as in the step 1002 mentioned in the above.

A step 107 in Fig. 1 is a step, in which the date of store-out is registered into the commissioned goods information 125 by using the contract code of the commissioned goods, which is inputted from the input apparatus, and the store-out of the goods is noticed to the distribution server and the client relating thereto. For inputting, the bar-code or the IC-card as the conveyable medium which are produced in the step 105 can be used. In this time, the delivery from the agent to the purchaser is done.

The detailed processing flow of the step 107 will be given with reference to Fig. 11.

A step 1101 is a step, in which it is decided or checked whether there is any agent coincident with that being identified in the contract code which is inputted from the input apparatus.

A step 1102 is a step, in which the date when the contract code is inputted from the input apparatus is registered into the column of the date of store-out of the commissioned goods information relating to the contracting code. For example, in case that the contract code "2529" is inputted, a date is set in the column of the store-out of the commissioned goods information 901, as is shown in Fig. 9.

In a step 1103, the fact that the delivery goods is put out or store-out from the storage of the agent is noticed to the distribution server from the agent. For example, in the case of the commissioned goods information 901 shown in Fig. 9, the identification number "2529" of the delivery goods and the store-out flag is noticed to the address of the distributor, i.e., "info@a-

butu.co".

In a step 1104, in the same manner as in the step 1103, the fact that the delivery goods is put out or stored-out from the storage of the agent is noticed to the client.

A step 108 is a step, in which the delivery goods information is renewed on the basis of the information noticed from the agent server. In case that the information noticed from the agent server includes the contract code and the store-in flag, "agent" is registered into a column of delivery condition of the delivery goods information 122 which relates to the contract code. In the other case that the information noticed from the agent server includes the contract code and the store-out flag, the date of the store-out is registered into the column of the delivery condition of the delivery goods information which relates to the contract code. In more detail, in the step 108, in case that the information of completion of delivery of the goods which is directly delivered to the address is inputted, the date and time of the delivery is also registered into the column of the "delivery condition" of the delivery goods information 122 shown in Fig. 4.

A step 109 is a step, in which the purchased goods information 124 is renewed on the basis of the information noticed from the agent server. In case that the information noticed from the agent server includes the contract code and the store-in flag, the name of the agent is registered into a column of the "storage" of the purchased goods information 124 which relates to the contract code. In the other case that the information noticed from the agent server includes the contract code and the store-out flag, as shown in Fig. 7, the date of the store-out is registered into the column of the "storage" of the delivery goods information 124 which relates to the contract code.

A step 110 is a step for detecting an abnormal condition of the delivery goods. For example, it detects such the delivery goods located in the agent, of which the purchaser does not come to receive it although several days have already passed-by. In the present embodiment, the step 110 functions as one of those on the distribution server, however, the step 110 can be carried out on the client or the agent server other than that mentioned in the above.

Each of the distribution server 111, the client 112 and the agent server 113 comprises means for outputting the information treated with respective server. From the first embodiment, following effects can be obtained.

(1) Because the distributor can deliver the goods after confirming that the receiver or addressee stays at home, the possibility or chance to deliver it during her/his absence is reduced, thereby cutting back the delivery cost. (However, the delivery on absence cannot necessarily neglected to be zero because she/he sometimes goes out after making the confirmation.)

(2) The purchaser can receive the purchased goods at an earlier timing at her/his home, by keeping her/himself for a moment from going outside for shopping, etc., since the date and time for delivery is clear for her/him in advance.

(3) In case that the purchaser does not come back home in the delivery time of the distributor for a several days, she/he can receive the goods in an earlier timing by using the agent (However, in this case, an assumption that the agent is doing business later than the distributor is necessary).

(4) On the goods which has been kept for a several days in the agent since the purchaser forgot to receive it, a reminder can be given from the distributor or the agent to the purchaser to receive it, thereby dissolving the forgetting to receive by the purchaser in an earlier timing. Further, the purchaser can check if she/he forgets to receive the goods by her/himself, thereby she/he may go to the distributor or the agent to receive it, or change the delivery address to her/his home address.

Fig. 12 shows a functional construction diagram of a second embodiment of the present invention. The portions and/or elements to which the same reference numerals as the first embodiment are attached indicate the same procedures and/or information of the first embodiment. In the present embodiment, only a portion different from the first embodiment will be explained. A reference numeral 1211 indicates an assembly of the functions of the distributor servers in the second embodiment, and 1213 an assembly of the functions of the agent servers.

In the first embodiment, it is assumed that a human lies between in the delivery of goods conducted through the agent. Namely, a person who stays in the agent at any time make the confirmation of receipt of the goods from the distribution center, and she/he deliver the goods to the resident of the delivery address. In the second embodiment, for accomplishing an unmanned agent, the delivery locker is provided in the agent. The delivery locker is an assembly of boxes for conducting the delivery of goods, and is similar to a coin-operated locker or storage in the shape which is provided in a station, etc. In each of boxes, there is provided an electronic key, a box open/close device to open or release and close or lock the key thereof, and a box observation device for affirming an existence of the goods inside thereof.

Fig. 13 shows a hardware construction of the agent server in the second embodiment.

Hereinafter, the detailed explanation will be given with reference to Fig. 12.

In a step 1204, in addition to the information outputted in the step 104 mentioned above, a condition for storing the delivery goods in the delivery locker (i.e., size(s) or necessity of refrigeration of the goods, etc.) is outputted by using the delivery goods information 1222.

In Fig. 14, only the differences between the delivery goods information 122 already shown in Fig. 4 and the delivery goods information 1222, with respect to respective "contract code" are shown. As is apparent from this, the delivery goods information 1222 is constructed by further adding items or columns "size(s)" and "necessity of refrigeration of the goods" to the items of the delivery goods information 122 shown in Fig. 4.

A step 1206 is a step, in which the information inputted from the input apparatus is registered into the commissioned goods information 125 and a locker information 127, thereby to notice the store-in to the distribution server and the client relating thereto. For the purpose of inputting, the bar-code or the IC-card as the conveyable medium which are produced in the step 1204 can be used.

An example of the locker information 1227 is shown in Fig. 15. The locker information comprises, other than "Box Number", various conditions for using the respective boxes, including "size(s)", "able to refrigerate?" and so on. Further, there is provided a "contract code" column for storing the contract code of the commissioned goods.

The detailed processing flow of the step 1206 will be given with reference to Fig. 16.

A step 1601 is a step for checking whether the electronic address of the distributor in the inputted information is in the list of the distributors or not, by using a distributor information 1226. This step is executed for prohibiting the distributors other than those registered from their impermissible use or tricking thereof. However, if such operation is not to be intended, there is no necessity of such the procedures mentioned above. An example of the distributor information 1226 is shown in Fig. 17.

A step 1602 is a step for checking whether there is a locker which satisfies the condition or not, with respect to the delivery goods scheduled to be stored-in. For example, in the case of the delivery goods of the contract number "7281", the condition for store-in is such as the reference numeral 1401 shows. Since there is a box satisfying the condition in accordance with the locker information 1501, a result of the checking is all right, i.e., OK.

A step 1603 is a step, in which an instruction to open or release the key is given to the open/close device of the box which is detected to satisfy the condition in the step 1602. After this, the distributor opens the door of the box, the key of which is opened to enter the delivery goods into it, and then closes the door thereof.

A step 1604 is the step of checking whether the door of the box, the key of which is opened, is closed or not. In case that the door is closed, a notice thereof is given from the box open/close device. A check is done depending on the presence the notice.

A step 1605 is a step, in which an instruction to close or lock the key is given to the open/close device of the box, the door of which is closed.

A step 1606 is a step for checking whether there is the goods inside of the key-locked box or not. For that checking, the box observation device such as an infrared light sensor, etc. is used. If the result of the checking is OK, the process of the store-out of the step 106 (already explained in the first embodiment) is executed.

A step 1207 is a step, in which the date of the store-out is registered into the commissioned goods information 125 and the store-out is noticed to the distributor server and the client relating thereto. For the purpose of inputting, also the bar-code and/or the IC-card which are produced in the step 105 can be used.

The detailed processing flow of a step 1207 will be given with reference to Fig. 18.

A step 1801 is a step for checking whether the commissioned goods relating to the inputted contract code is stored in the locker or not. For example, as shown in Fig. 15, in case that the inputted contract code is "4293", since it coincides with contract code of the locker information 1502, the result of the checking is to be OK.

A step 1802 is a step, in which an instruction to open or release the key is given to the open/close device of the box in which the commissioned goods relating to the contract code is stored. For example, in case that the inputted contract code is "4293", the instruction of key-opening is given to the locker open/close device having the box number "3" in the locker information 1502, as shown in Fig. 15.

After that, the purchaser opens the door of the box whose key is released to take out the purchased goods, and then closed the door. Further, steps 1604, 1605 and 1606 are executed. In case that the result of the checking in the step 1606 is no good, i.e., NG, then, a step 1803 is executed.

The step 1803 is a step, in which the "contract code" column of the locker information of the locker is deleted, from which locker the purchased goods is taken out. When the door is closed, a notice is given from the box open/close device. A checking is done depending on the presence of this notice.

In the second embodiment mentioned above, the distributor can store the delivery goods in the delivery locker and the purchaser can take out from that delivery locker. Thereby, dehumanization of the agent can be realized, and there is no time limit for the purchaser to receive it through the agent. Therefore, it is possible for the purchaser to receive the goods in an earlier timing.

Fig. 19 shows a functional construction diagram of a third embodiment of the present invention. The portions and/or elements to which the same reference numerals as the first embodiment are attached indicate the same procedures and/or information of the first embodiment. A reference numeral 1911 indicates an assembly of the functions of the distributor servers in the third embodiment, and 113 an assembly of the functions of the agent servers. In the present embodiment, only a portion different from the first embodiment is

explained.

In the first embodiment, the compiling function of the delivery information 121, the delivery goods information 122, and the schedule information 123 are treated as if they are out of the scope of the present invention, therefore, an influence to other servers due to deletion of those information is not taken into consideration. In the present embodiment, however, a total managing system for delivery goods will be explained, in which the influence due to the deletion of the delivery information and the schedule information is also taken into consideration.

The detailed explanation of the third embodiment will be given by referring to Fig. 19.

A step 1901 is a step for compiling the delivery information. The compile of the delivery information can be done at an arbitrary time point. If the delivery information is deleted, a step 1902 is called up.

The step 1902 is a step in which the deletion of the scheduled date and time of delivery is noticed to the client at the address for the delivery relating to the deleted delivery information. For example, if the delivery information 301 shown in Fig. 3 is deleted, the delivery goods information 404 in Fig. 4 corresponding to the area name "Utsukushigaoka" and the delivery starting time "960925(16)" is detected, and the deletion of the scheduled date and time for delivery of the delivery goods of the contract code "1001" in Fig. 4 is noticed to the electronic address "yamada@aaa.ccc" of the delivery address of the client.

After the notice of the deletion in the step 1902, the step 101 is executed on the basis of the delivery goods information which is deleted.

In a step 1903, receiving the notice of deletion of the scheduled date and time for delivery from the client, the column of the scheduled date for delivery corresponding to the delivery goods information is made blank. For example, when receiving the notice of deletion of delivery of the contract code "1205", the column of the scheduled date for delivery of the delivery goods information 404 is blanked, as shown in Fig. 4.

After the execution of the step 1903, the step 101 is executed with respect to the delivery goods information whose column of the scheduled date for delivery is blanked.

A step 1904 is a step in which the schedule information is compiled. The compiling of the schedule information can be done at an arbitrary time point. In case that the schedule information relating to receipt of the delivery goods is deleted, a step 1905 is called up.

In the step 1905, the column of "schedule" for delivery of the purchased goods information relating to the deleted schedule of receipt of the delivery goods is blanked, and the deletion of the scheduled date and time for delivery is noticed to the related distribution server. For example, in case that the schedule 602 in Fig. 6 is deleted, the column of the scheduled date of the purchased goods information 705 in Fig. 7, which

has the scheduled date for delivery coincident with the starting date and time of the schedule 602, is blanked, and the deletion of the scheduled date and time of the contract code "1001" is noticed to "Distributor A".

In a step 1906, receiving the notice of deletion of the scheduled date and time for delivery from the distribution server, the column of the scheduled date and time of the corresponding purchased goods information is blanked as well as the related schedule is deleted. For example, when receiving the notice of deletion of delivery of the contract code "1001", the scheduled date "960925(16)" for delivery 704 in Fig. 7 is blanked, and the schedule information 602 which has the same date and time as 704 in the column of the starting date and time is deleted.

In a step 1907, receiving the notice from the client in the same manner as in the step 103 mentioned in the above, it is registered into the delivery goods information. However, sometimes the delivery information may be deleted by the step 1901 mentioned above during the execution of the steps 101 and 102. Therefore, it is registered into the delivery goods information after confirming the existence of the scheduled date and time in the delivery information.

In accordance with the present embodiment, when the purchaser deletes her/his schedule to receive the goods, it is automatically noticed to the distributor and a list of available date and time for delivery is transmitted from the distributor again. Therefore, the purchaser should not always be bound to the schedule for receiving the goods, and she/he can re-adjust the schedule easily. Further, if the distributor deletes the schedule for delivery, it is automatically noticed to the purchaser, and a list of available date and time for delivery is transmitted from the distributor again for the purchaser to ensure the schedule to receive it. Thereby, the distributor can reduce the influence on the purchaser as small as possible.

It is also possible to store the program for executing the procedures shown in Figs. 1, 12 and 19 into a portable storage medium, such as a floppy disk or an optical disk, so as to be read into a main memory for execution thereof in a personal computer system, etc.

With the delivery managing system of the present invention fully explained in the above has following effects:

- (1) Because the distributor can distribute the delivery goods after confirming that the stay of the receiver or addressee at home, therefore, the possibility or chance of delivery in absence of the receiver or addressee is reduced, thereby reducing the cost for delivery. (However, the delivery during absence of the resident cannot necessarily neglected to be zero because she/he sometimes goes out after making confirmation.)
- (2) The purchaser can receive the purchased goods at an earlier timing at her/his home, by keep-

ing her/himself for a moment from going outside for shopping, etc., since the date and time for delivery is clear for her/him in advance.

(3) In case that the purchaser does not come back home in the delivery time of the distributor for a several days, she/he can receive the goods in an earlier timing by using the agent (However, in this case the assumption is necessary that the agent is doing business later than the distributor. In case that the delivery locker is provided in the agent, since the dehumanization of the agent can be achieved, realization of the above assumption becomes easier.)

(4) On the goods which has been kept for a several days in the agent since the purchaser forgot to receive it, a reminder can be given from the distributor or the agent to the purchaser to receive it, thereby dissolving the forgetting to receive by the purchaser in an earlier timing. Further, the purchaser can check if she/he forgets to receive the goods by her/himself, thereby she/he may go to the distributor or the agent to receive or change the delivery address to her/his home address.

(5) When the purchaser deletes her/his schedule to receive the goods, it is automatically noticed to the distributor and a list of available date and time for delivery is transmitted from the distributor again. Therefore, the purchaser should not be always bound to the schedule for receiving the goods, and she/he can re-adjust the schedule easily.

(6) If the distributor deletes the schedule for delivery, it is automatically noticed to the purchaser, and a list of available date and time for delivery is transmitted from the distributor again, for the purchaser to ensure the schedule to receive. Thereby, the distributor can reduce an influence on the purchaser as small as possible.

Claims

1. A system for managing the delivery of goods from a distribution centre through an agent to a receiver, comprising:

- a client for providing at least a schedule information of the receiver;
- a distribution server for providing at least a delivery schedule information and for managing the delivery of the goods;
- an agent server for managing the commission on the goods by the agent;
- a data transmission network interconnecting said client, said agent server and said distribution server;
- means for determining the date and time for delivery of the goods, or for deciding the agent to be used, between said client and said distribution server, or among said client, said distribution server and said agent server; and

- means for noticing of store-in and/or store-out of the goods into and/or from the agent to at least one of said distribution server and said client.
2. The system of claim 1, including means for managing information on the store-in and/or store-out of the goods into and/or from the agent and detecting an abnormality of the goods in at least one of said distribution server and said client.
 3. A system for managing the delivery of goods from a distribution centre to a receiver, comprising:
 - a client for providing at a least schedule information of the receiver;
 - a distribution server for providing at least a delivery schedule information and for managing the delivery of the goods;
 - a data transmission network interconnecting said client and said distribution server; and
 - means for determining the date and time for delivery of the goods, or for deciding an agent to be used, between said distribution server and said client, or between said client and said distribution server.
 4. A system for managing the delivery of goods from a distribution centre through an agent to a receiver, comprising:
 - a distribution server for providing at a least delivery schedule information and for managing the delivery of the goods;
 - an agent server for managing the commission on the goods by the agent;
 - a data transmission network interconnecting said distribution server and said agent server;
 - means for noticing the store-in and/or store-out of the goods into and/or from the agent, from said agent server to said distribution server or the receiver; and
 - means for managing information on the store-in and/or store-out of the goods into and/or from the agent and detecting an abnormality of the goods, in said distribution server.
 5. The system of claim 1, including means in said distribution server or said client for outputting a goods information, wherein said distribution server includes means for noticing the goods information to said agent server, and said agent server includes means for reading out the goods information from said outputting means, and means for comparing the goods information noticed from said distribution server with the goods information read out by said reading out means.
 6. The system of claim 1 or 3, wherein said client further comprises:
 - means for compiling the schedule information;
 - means for noticing deletion of the schedule information for receiving the goods to the distribution server related thereto, in response to the deletion thereof;
 - means for deleting the related schedule information in response to a notice of deletion of the delivery schedule information from said distribution server; and wherein said distribution server further comprises:
 - means for deleting the delivery schedule information of the goods in response to the notice of the deletion of the schedule information for receiving the goods from said client.
 7. The system of claim 1, 3 or 4, wherein said distribution server further comprises:
 - means for compiling the delivery schedule information; and
 - means for noticing the deletion of the delivery schedule information to all of said clients relating the deletion thereof.
 8. The system of claim 1 or 4, wherein said agent server further comprises:
 - a delivery locker having a plurality of boxes into which the goods can be stored, each box comprising at least means for observing the box; and
 - means for deciding the store-in and/or store-out of the goods into and/or from said agent by using the observing means of said delivery locker.
 9. A system for managing the delivery of goods from a distribution centre through an agent to a receiver, comprising:
 - a client for providing at least a schedule information of the receiver or an information of the agent to be used;
 - a distribution server for managing the delivery of the goods;
 - an agent server for managing commission on the delivery goods by the agent and having means for detecting store-in and/or store-out of the delivery goods into and/or from the agent; and
 - a data transmission network interconnecting said client, said agent server and said distribution server;
 wherein said distribution server comprises:

means for providing a delivery schedule information on delivery schedule and a delivery goods information on a content of the goods, and for noticing of a list of available delivery schedule information to said client on the basis of the delivery schedule information and the delivery goods information; 5

means for setting the date and time for delivery of the goods or the agent to be used into the delivery schedule information in response to the schedule information and the information of the agent to be used which are noticed from said client; 10

means for setting a condition of the store-in into the agent in the delivery goods information relating thereto, in response to a notice of the store-in of the goods from said agent server; 15

means for setting a condition of the store-out from the agent in the delivery goods information relating thereto, in response to a notice of the store-out of the goods from said agent server; 20

means for outputting the goods information of the goods to be delivered to the agent; and 25

means for detecting the delivery goods information of the delivery goods in abnormal condition; 30

wherein said client further comprises:

means for providing a schedule information and a purchased goods information into which the contents of the delivery goods and criteria for use of the agent are described; 35

means for deciding to use the agent or not, on the basis of the list of the available delivery schedule information and the schedule information and the criteria for use of the agent of the purchased goods information from said distribution server, for noticing of the date and time for delivery or the agent to be used to said distribution server, and for setting a receipt schedule of the delivery goods into the schedule information if it is decided not to use the agent; 40 45 50

means for setting the condition of the store-in into the agent in the purchased goods information of the delivery goods, in response to a notice of the store-in thereof from the agent server; 55

means for setting the condition of the

store-out from the agent in the purchased goods information of the delivery goods, in response to a notice of the store-out thereof from the agent server;

means for outputting the purchased goods information of the goods to be delivered to the agent server;

and wherein said agent server further comprises:

means for providing a commissioned goods information relating to the delivery goods transferred from the distribution centre into the agent to be commissioned;

means for setting an information relating to the store-in of the delivery goods to be commissioned into the commissioned goods information, and for noticing the same to said distribution server and the client relating thereto, in response to input of the store-in of the delivery goods to be commissioned; and

means for setting an information relating to the store-out of the delivery goods to be commissioned into the commissioned goods information, and for noticing the same to said distribution server and the client relating thereto, in response to input of the store-out of the delivery goods to be commissioned.

10. The system of claim 9, wherein said agent server further comprises:

a delivery locker for common use, which comprises a plurality boxes, and box open/close devices and box observation devices for each box thereof;

means for providing the commissioned goods information relating to the delivery goods transferred from the distribution centre, and a locker information having at least the size of each box and an identification number of the delivery goods stored therein;

means for searching, in response to input of the information relating to the store-in of the delivery goods to be commissioned, a box satisfying a condition for storing the goods to be commissioned,

means for instructing releasing of key to the open/close device of the box which is searched out;

means for instructing locking of the key of the open/close device when a door of the box is closed again;

means for setting the store-in information to the commissioned goods information; 5

means for setting an identification code of the goods to be commissioned into the locker information relating to the box into which the goods is stored;

means for noticing of the store-in of the goods to be commissioned to said distribution server and said client related thereto; 10

means responding to input of the identification code of the goods to be commissioned;

means for instructing releasing of the key to the box open/close device of the box which is coincident with the identification code; 15

means for instructing locking of the key to the box open/close device when the door of the box is closed again; 20

means for setting the store-out of the goods to be commissioned, into the locker information and the commissioned goods information; and means for noticing of the store-in of the goods to be commissioned to said distribution server and said agent server related thereto. 25

11. A system for managing the delivery of goods from a distribution centre through an agent to a receiver, comprising: 30

a client for providing at least an order for receiving the goods by the receiver;

a distribution server providing at least a delivery schedule information and for managing the delivery of the goods; 35

an agent server for managing the commission on the goods by the agent; and

a data transmission network interconnecting said client, said agent server and said distribution server. 40

12. The system of claim 11, wherein a conveyable memory medium is used for communicating between said client and said agent server, on which an information relating to the delivery and the receipt on the goods is outputted. 45

13. The system of claim 11, wherein said distribution server sends back an identification information corresponding to the order from said client to said client for certifying that an addressee of the goods is to be said client when it is sent thereto, and outputs said identification number into a memory medium, which is attached onto said goods. 50 55

14. The system of claim 11, wherein said distribution server sends back an identification information cor-

responding to the order from said client to said client as well as to said agent server depending on the order from said client or a shape of the goods, and said agent server checks said identification information read from said client into a memory medium with the identification information from said distribution server when the goods is delivered.

15. A product program for use with a computer-aided delivery managing system for managing the delivery of goods from a distribution centre through an agent to a receiver, said system including at least a client, an agent server and a distribution server interconnected through a data transmission network, comprising:

a client source code segment for providing at least a schedule information of the receiver;

a distribution server source code segment for providing at least a delivery schedule information and for managing the delivery of the goods; and

an agent server source code segment for managing the commission on the goods by the agent,

wherein of said client source code segment and/or said distribution server source code segment includes a source code segment for determining the date and time for delivery of the goods, alternatively, for deciding the agent to be used, between said client and said distribution server, and

wherein said agent server source code segment includes a source code segment for noticing of store-in and/or store-out of the goods into and/or from the agent to at least one of said distribution server and said client.

16. A product program for use with a computer-aided delivery managing system for managing the delivery of goods from a distribution centre through an agent to a receiver, said system including at least a client and a distribution server interconnected through a data transmission network, comprising:

a client source code segment for providing at least a schedule information of the receiver; and

a distribution server source code segment for providing at least a delivery schedule information and for managing the delivery of the goods,

wherein said client source code segment and/or said distribution server source code segment includes a source code segment for determining the date and time for delivery of the goods between said client and said distribution server.

17. The product program of claim 15 or 16, wherein
said client source code segment and/or said distribution server source code segment further comprises a source code segment of said information in
said client and said distributor server. 5
18. A product program for use with a computer-aided
delivery managing system for managing the delivery of goods from a distribution centre through an
agent to a receiver, said system including at least 10
an agent server and a distribution server interconnected through a data transmission network, comprising:
- a distribution server source code segment for 15
providing at least a delivery schedule information and for managing the delivery of the goods; and
an agent server source code segment for managing the commission on the goods by the agent, 20
wherein said agent server source code segment comprises:
- a source code segment for noticing of 25
store-in and/or store-out of the goods into and/or from the agent, from said agent server to said distribution server or the receiver; and
a source code segment for managing information on the store-in and/or store-out of 30
the goods into and/or from the agent and detecting an abnormality of the goods, in said distribution server. 35
19. The product program of claim 20, wherein said distribution server source code segment further comprises a source code segment of said information in
said distributor server. 40

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50

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FIG. 1

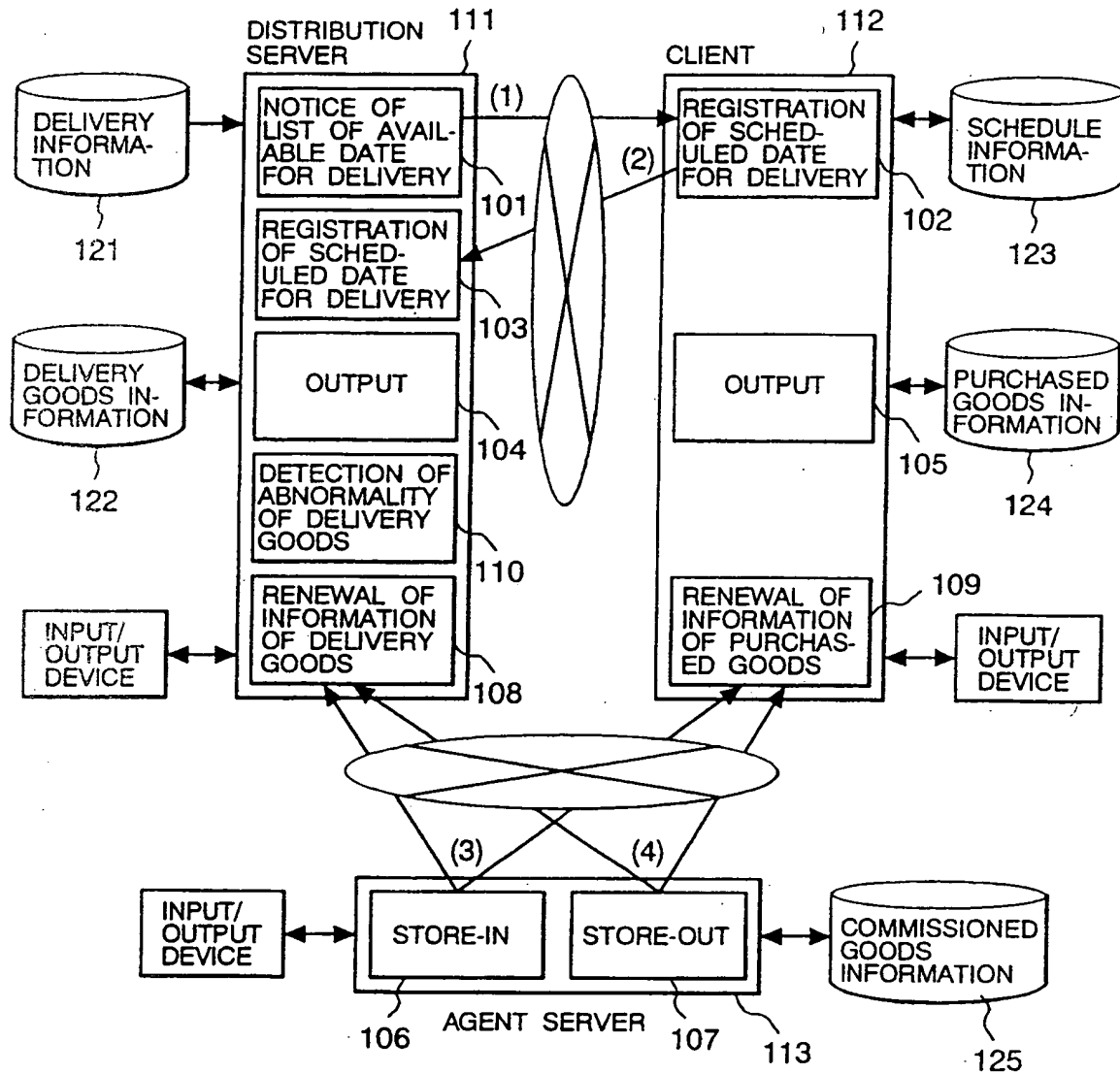


FIG. 2

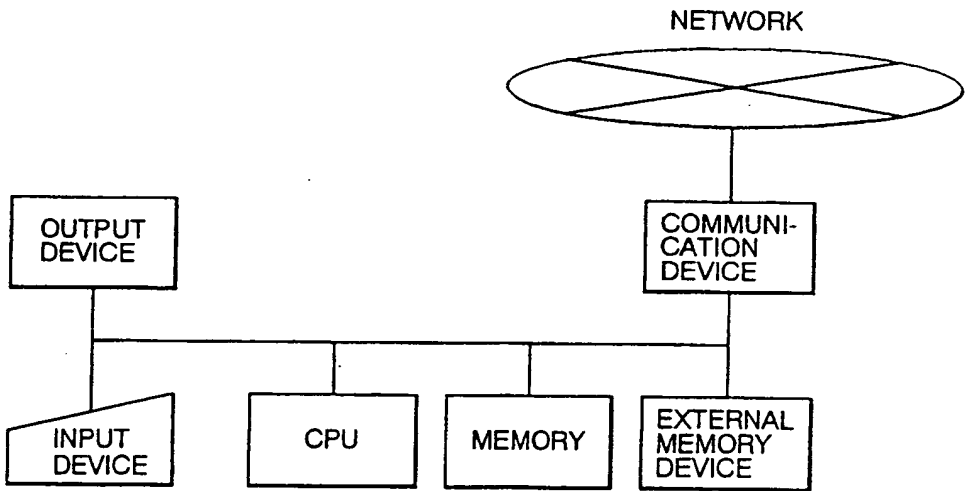


FIG. 3

AREA NAME	STARTING DATE AND TIME FOR DELIVERY	COMPLETION DATE AND TIME FOR DELIVERY
Utsukushigaoka	960924 (16)	960924 (18)
Utsukushigaoka	960925 (16)	960925 (18)
Azamino	960924 (10)	960924 (12)

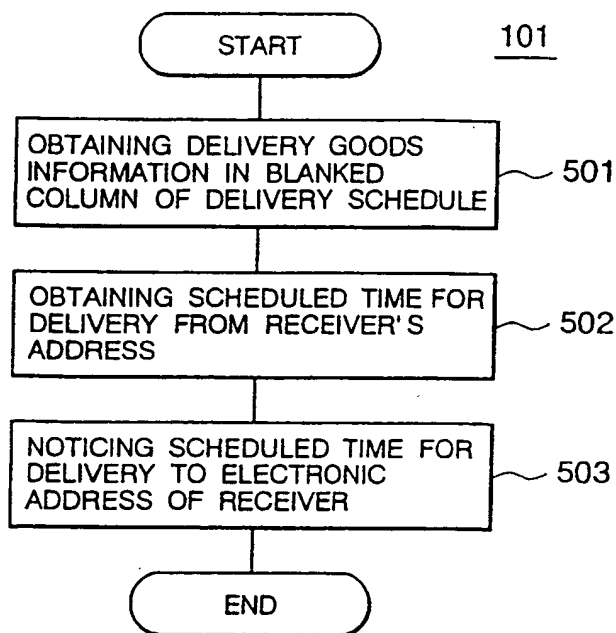
121

301

302

FIG. 4

CONTRACT CODE	RECEIVER ADDRESS	DELIVERY GOODS	413 {		411 {		412 {		122
			ARRIVAL DATE OF DELIVERY GOODS	SCHEDULED DATE FOR DELIVERY	ELECTRONIC AD- DRESS OF RECEIVER	CONDITION OF DELIVERY			
1001	Utsukushigaoka Nishi 2-4-1	CLOCK	960922 (15)		tsukuda@aaa. bbb		404 401		
1205	Utsukushigaoka Higashi 3-2-10	PC	960923 (15)	960924 (16)	yamada@aaa. ccc				
7281	Azamino Minami 4-4	BAG	960923 (15)	X AGENT	eguchi@aaa. ccc	AGNET			
							403		
							402		

FIG. 5**FIG. 6**

STARTING DATE / TIME	COMPLETING DATE / TIME	PLACE	CONTENTS	123
960924 (9)	960924 (18)	Kashimada	BUSINESS	601
960925 (11)	960925 (14)	Shibuya	WEDDING PARTY OF FRIEND	
960925 (16)	960925 (18)	Own House	RECEIPT OF DELIVERY	602

FIG. 7

CONTRACT CODE	PURCHASED GOODS	STANDARD FOR USE OF AGENCY	AGENT TO BE USED	SCHEDULED DATE FOR DELIVERY	PLACE OF STORAGE
1001	CLOCK	5 DAYS PASSED	X AGENT	960925 (16)	A DIS- TRIBUTOR
2529	BOOK	3 DAYS PASSED	X AGENT		X AGENT
3795	VERSE	NOT USED			

704

FIG. 8

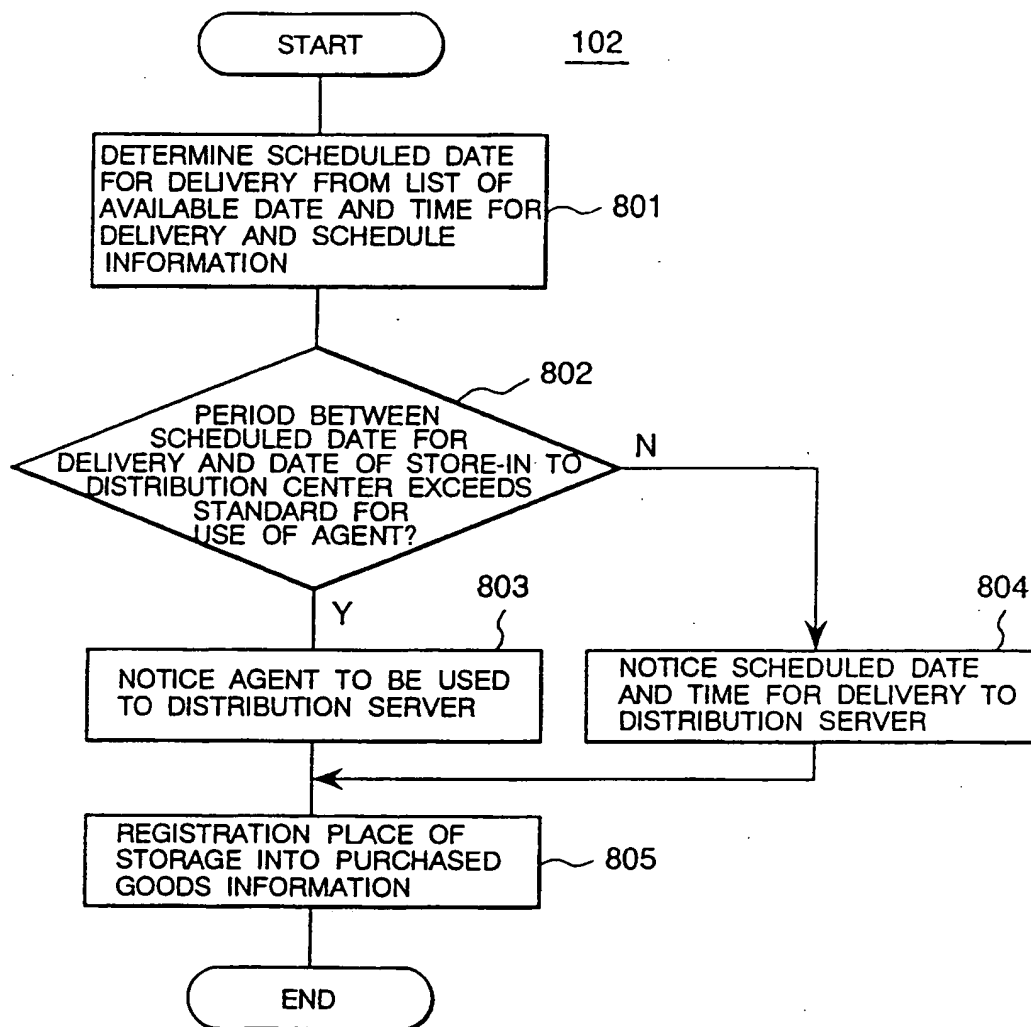


FIG. 9

125

CONTRACT CODE	PURCHASED GOODS	DAY OF STORE-IN	DAY OF STORE-OUT	ELECTRONIC ADDRESS OF DISTRIBUTOR	ELECTRONIC ADDRESS OF PURCHASER
2529	BOOK	960916		info@a - butu. co	tsukuda@aaa. bbb
4293	CLOTHES	960924		info@a - butu. co	yamada@aaa. ccc
7281	BAG	960914	960919	info@a - butu. co	

901

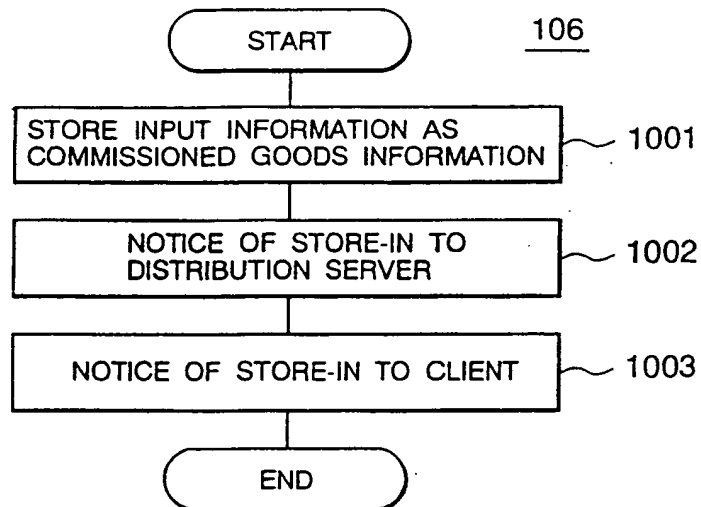
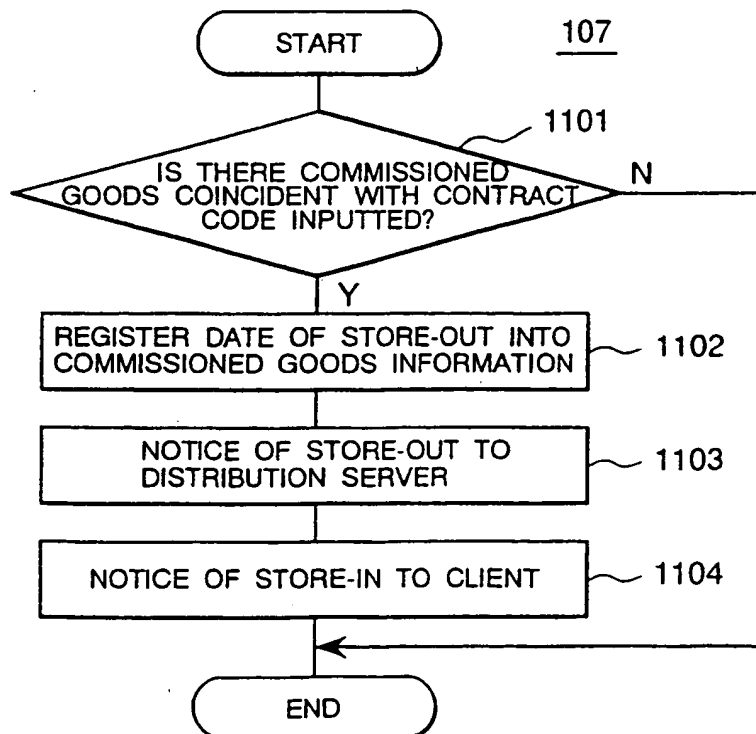
FIG. 10**FIG. 11**

FIG. 12

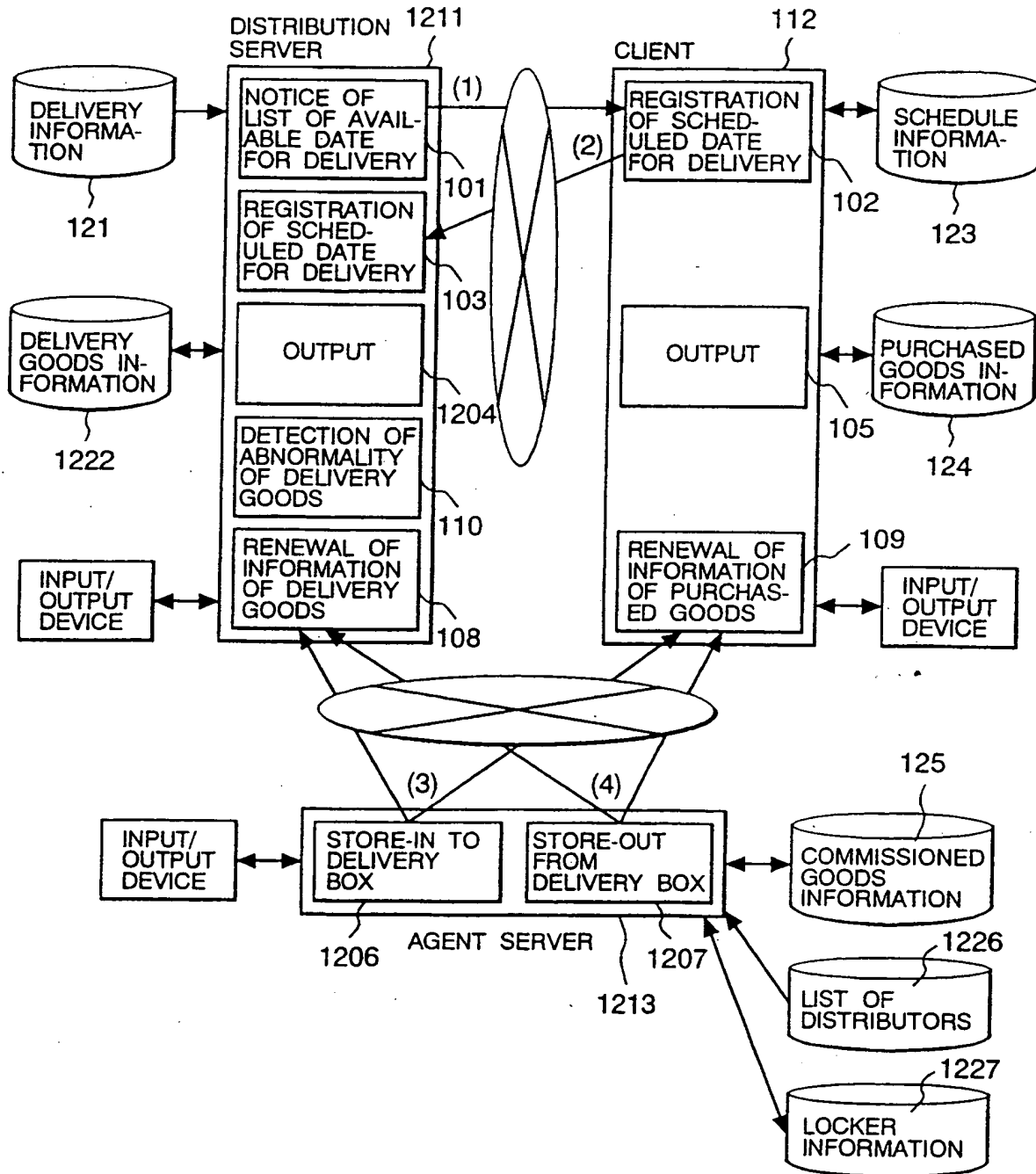
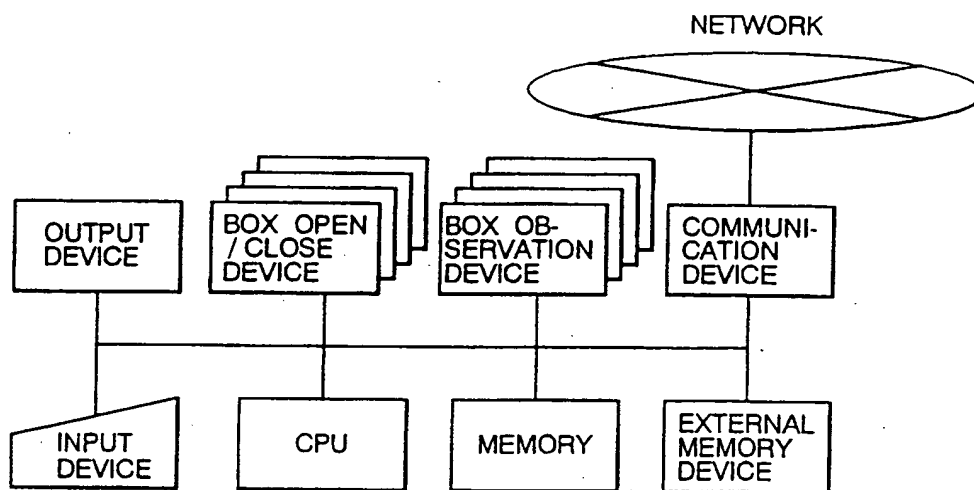


FIG. 13**FIG. 14**

CONTRACT CODE	SIZE (S)	NECESSITY OF REFRIGERATION
1001	10 * 10 * 10	NOT NECESSARY
1205	50 * 50 * 30	NOT NECESSARY
7281	30 * 30 * 30	NOT NECESSARY

1222

1401

FIG. 15

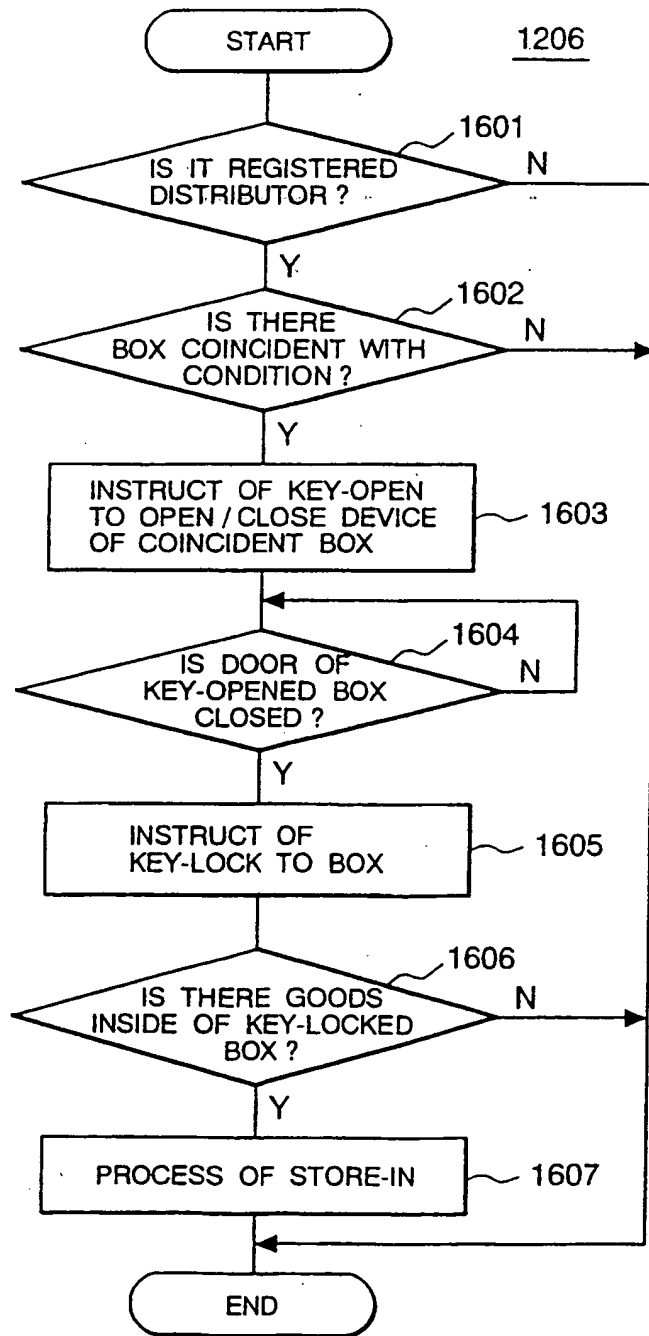
1227

BOX NUMBER	SIZE (S)	IS REFRIGERATION POSSIBLE ?	CONTRACT CODE
1	30 * 40 * 10	IMPOSSIBLE	
2	50 * 50 * 50	IMPOSSIBLE	
3	30 * 30 * 30	POSSIBLE	4293

1501

1502

FIG. 16



*FIG. 17*1226

ELECTRONIC ADDRESS FOR RESPECTIVE DISTRIBUTORS
info@a - butu. co
xxx@b - butu. co
yyy@buturyuu -ccc. co

FIG. 18

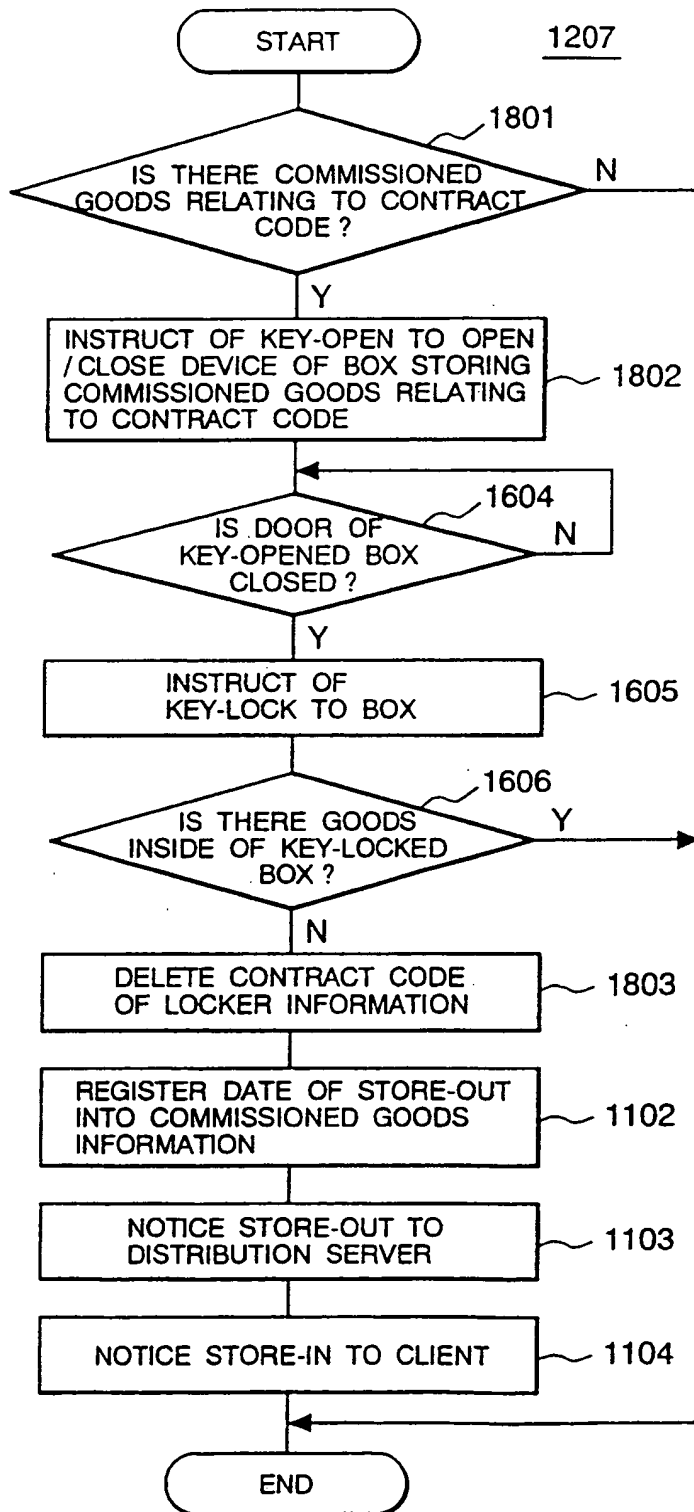
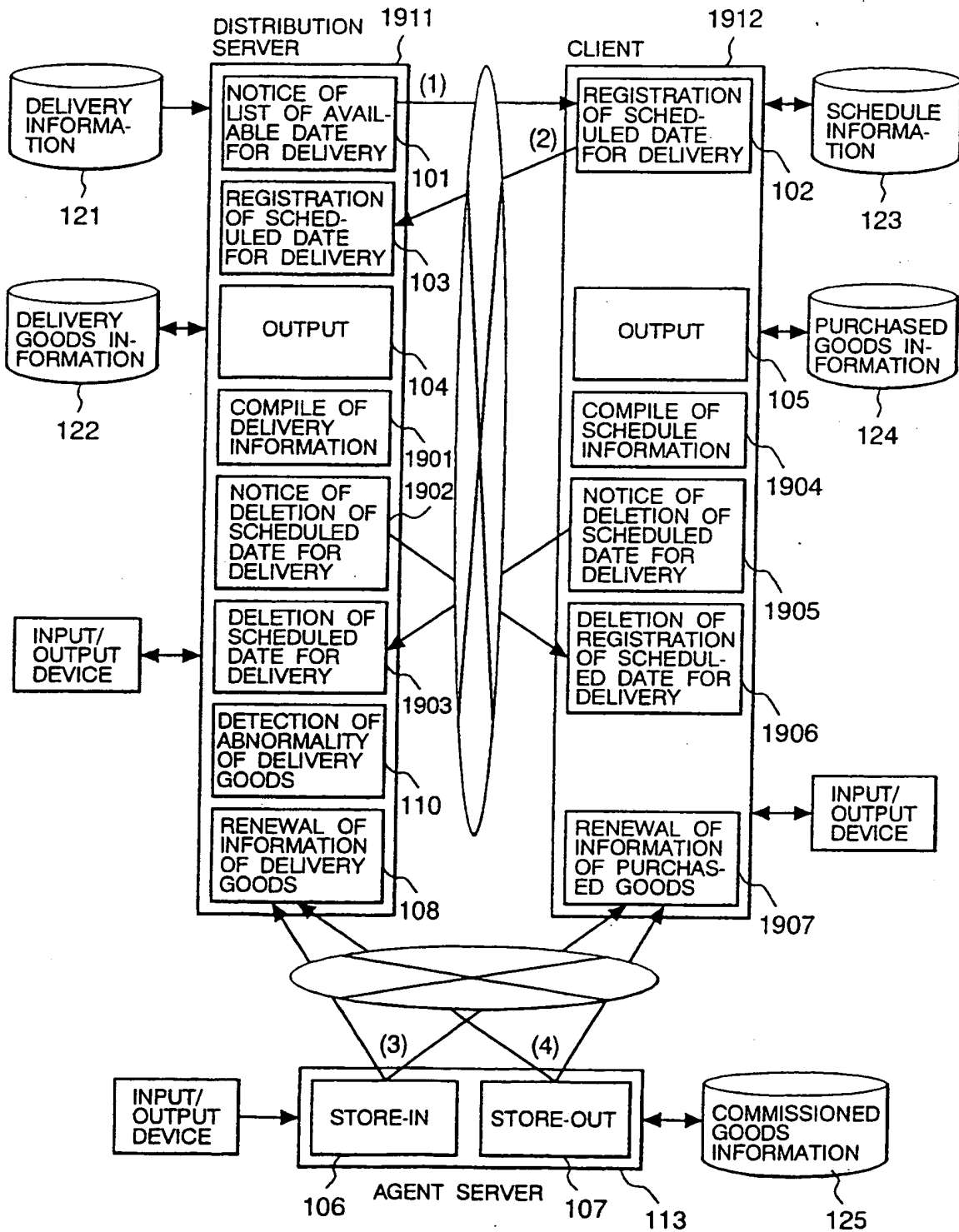


FIG. 19



(19)



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(11)

EP 0 845 747 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
09.02.2000 Bulletin 2000/06

(51) Int. Cl.⁷: G06F 17/60

(43) Date of publication A2:
03.06.1998 Bulletin 1998/23

(21) Application number: 97120131.4

(22) Date of filing: 17.11.1997

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE
Designated Extension States:
AL LT LV MK RO SI

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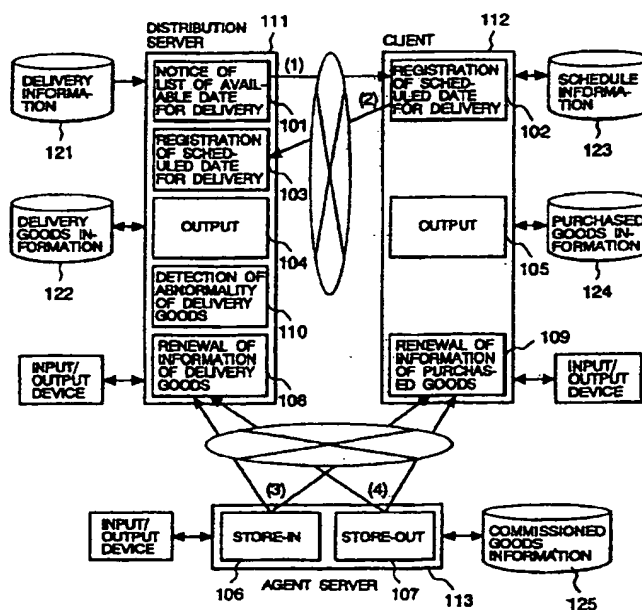
(30) Priority: 28.11.1996 JP 31743896

(71) Applicant: Hitachi, Ltd.
Chiyoda-ku, Tokyo 101 (JP)

(54) A delivery managing system

(57) A system for managing the delivery of goods from a distribution centre through an agent to a receiver comprises a client for providing at least a schedule information of the receiver; a distribution server for providing at least a delivery schedule information and for managing the delivery of the goods; an agent server for managing the commission on the goods by the agent; a data transmission network interconnecting said client, said agent server and said distribution server; means for determining the date and time for delivery of the goods, or for deciding the agent to be used, between said client and said distribution server; and means for noticing of store-in and/or store-out of the goods into and/or from the agent to at least one of said distribution server and said client.

FIG. 1





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 12 0131

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 370 146 A (STRATEGIC PROCESSING CORP) 30 May 1990 (1990-05-30)	1,3-7,9, 11,15-19	G06F17/60
Y	* column 8, line 21-32 * * column 20, line 45-50 * * column 21, line 9 - column 23, line 12 *	2,8,10, 12-14	
Y	US 4 894 717 A (KOMEI YUTAKA) 16 January 1990 (1990-01-16) * abstract * * whole document *	2,8,10, 12-14	
X	EP 0 683 466 A (THOMAS & BETTS CORP) 22 November 1995 (1995-11-22) * abstract * * column 5, line 20 - column 9, line 36 * * column 10, line 3 - column 12, line 11 * * column 14, line 45-49 *	1,3-5,9, 11,15-19	
A	US 5 223 829 A (WATABE HIDETO) 29 June 1993 (1993-06-29) * abstract * * column 3, line 59 - column 8, line 65 *	2,8,10, 12-14	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) & JP 08 287158 A (HITACHI LTD), 1 November 1996 (1996-11-01) * abstract *	6,7	G06F
A	US 5 485 369 A (NICHOLLS PETER ET AL) 16 January 1996 (1996-01-16) * abstract * * column 5, line 34-40 *	1-19	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 7 December 1999	Examiner Corcoran, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 12 0131

DOCUMENTS CONSIDERED TO BE RELEVANT			
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